

**REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF MINERAL RESOURCES
EXAMINATION FOR THE MINE SURVEYORS CERTIFICATE OF COMPETENCY**

DATE: 15 April 2011 (Friday)
TIME: 12:30 to 14:30 (2 Hours)

TOTAL MARKS: 100
TO PASS: 50

GEOLOGY

Note: Answer all questions

QUESTION 1

“Crystal Form” is a Physical Characteristic of a Mineral. Discuss this in detail. (10)

QUESTION 2

The Rock-forming “Femic Minerals Group” comprises a number of families in each of which the members have a close relationship to one another. Name and discuss the different families. (10)

QUESTION 3

Minerals can be classified by their various properties.
Complete the attached tabulation to indicate some of these properties. (19)

QUESTION 4

Discuss the Characteristics of Igneous Rocks under the following headings: Mode of Occurrence and Textures. (10)

QUESTION 5

Physical Geology is concerned with the processes and forces that bring about changes in the shape of the earth’s surface. Discuss in detail the different kind of “Lakes” and how they are formed. (10)

QUESTION 6

Strata are said to be “faulted” when there is relative movement across a plane of fracture. Discuss the different types of faults and the effect that they have on strata. (10)

QUESTION 7

Discuss in detail the “Ventersdorp Supergroup”. (10)

QUESTION 8

Write short notes on the following Geophysical Prospecting methods:

- 8.1 Gravimetric Surveying
- 8.2 Magnetometric Surveying
- 8.3 Seismic Methods
- 8.4 Radiometric Surveying (10)

QUESTION 9

Discuss “Vermiculite” in South Africa with reference to the following:

- 9.1 Uses and properties.
- 9.2 Method of mining.
- 9.3 Location. (11)

TOTAL 100

QUESTION 3

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EXAM NO.

Physical Properties	MINERAL					
	Chalcopyrite	Galena	Stibnite	Cinnabar	Halite	Apatite
Crystal System						
Colour						
Streak						
Fracture						
Cleavage						
Hardness						
Density						

(19)